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**(54) Magnetic recording medium and its manufacturing method**

(57) A magnetic recording medium with a high recording density has a first ferromagnetic layer (31), a non-magnetic layer (32), and a second ferromagnetic layer (33) successively deposited as the recording layer (3) on a non-magnetic substrate (1). The recording layer is heated in concentric circular shapes to divide it into

regions in which the magnetic interactions between the ferromagnetic layers (31, 33) exhibit ferromagnetism (F) and regions that exhibit anti-ferromagnetism (AF). The ferromagnetic regions are used for recording tracks, and the anti-ferromagnetic regions function as guard bands. In this manner track density is increased without roughening the surface of the recording medium.

**FIG. 5B**

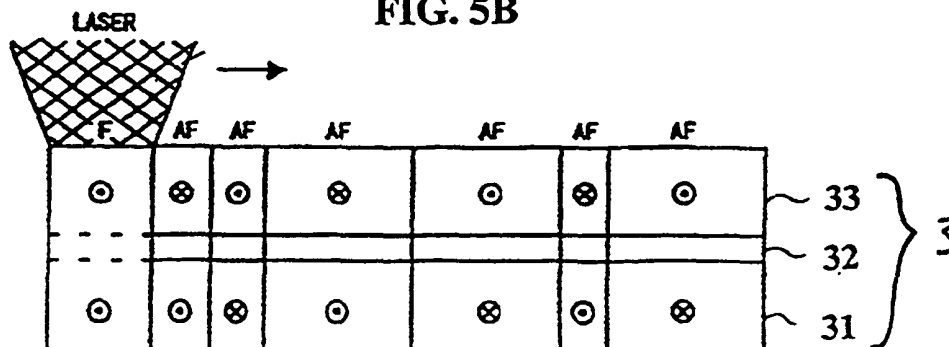


FIG. 5C

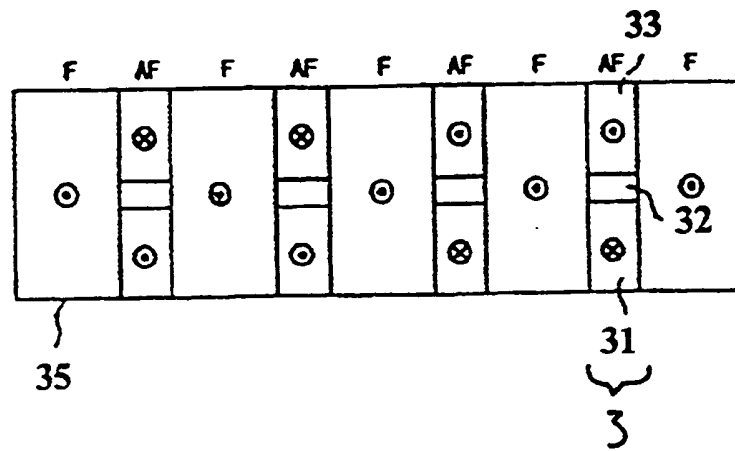


FIG. 1A

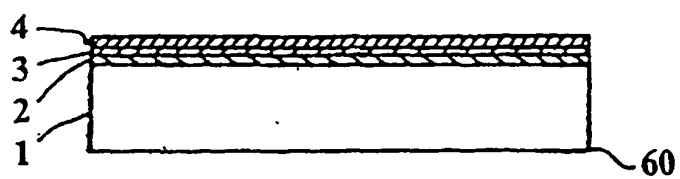
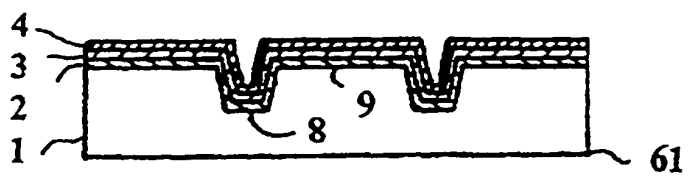
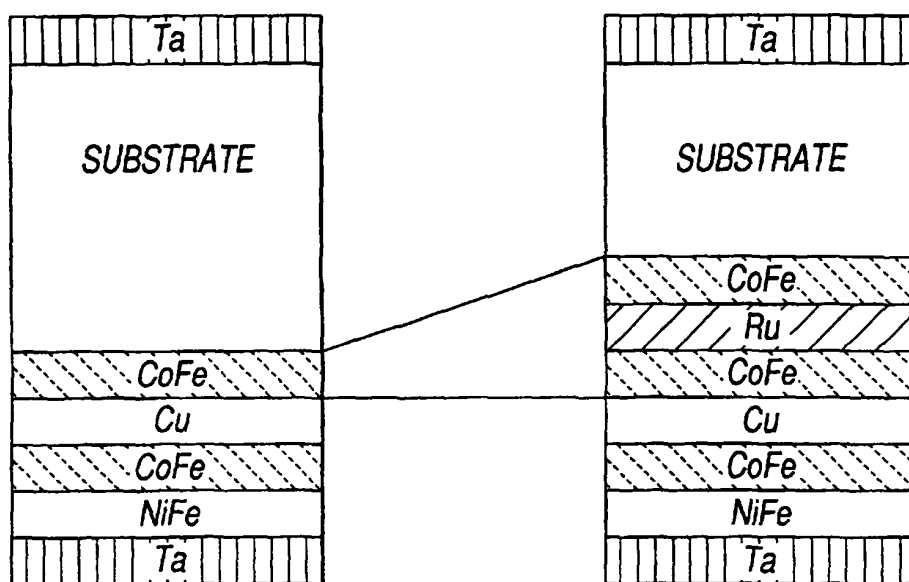


FIG. 1B





*Fig.2A*

*Fig.2B*

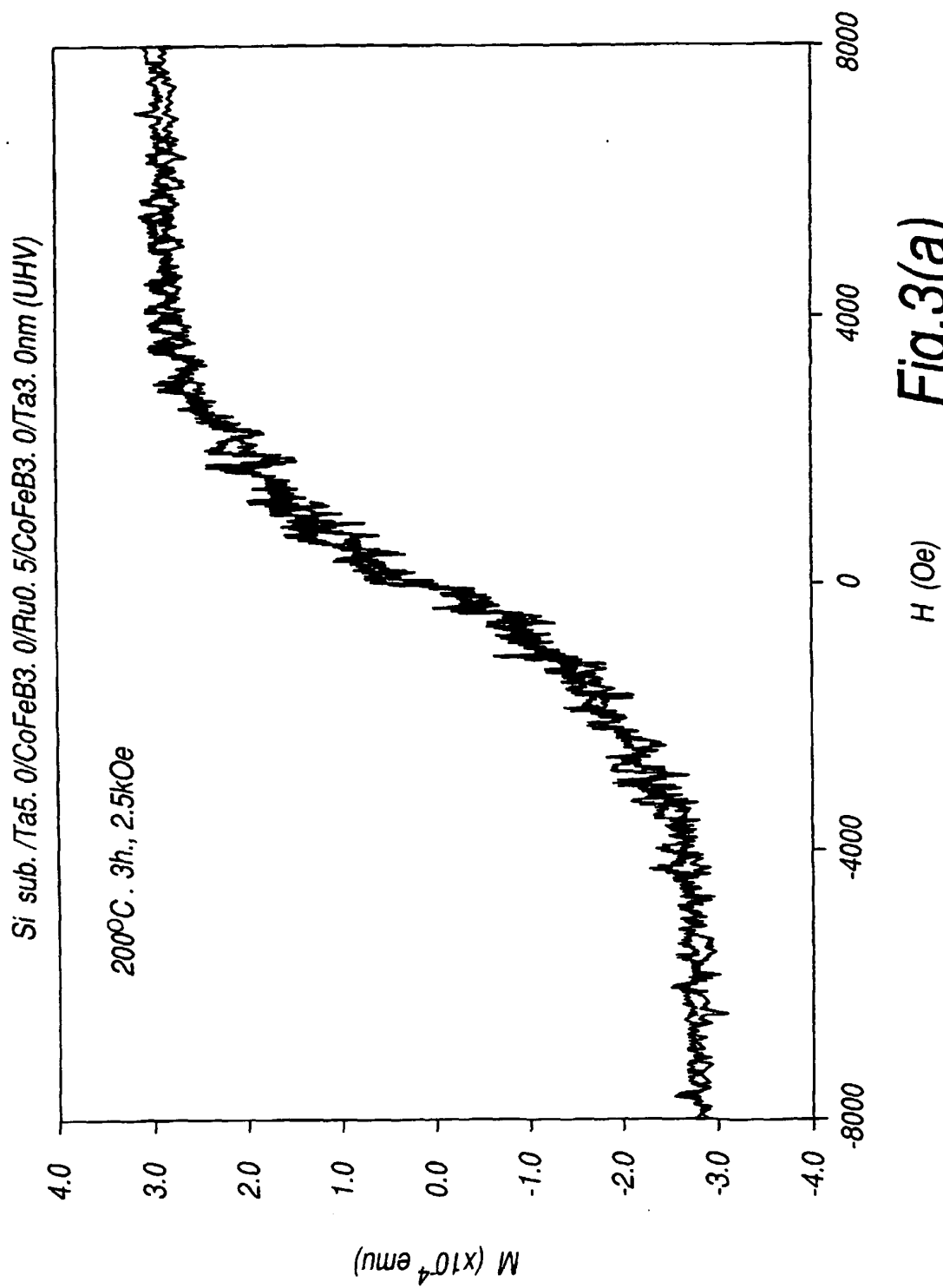
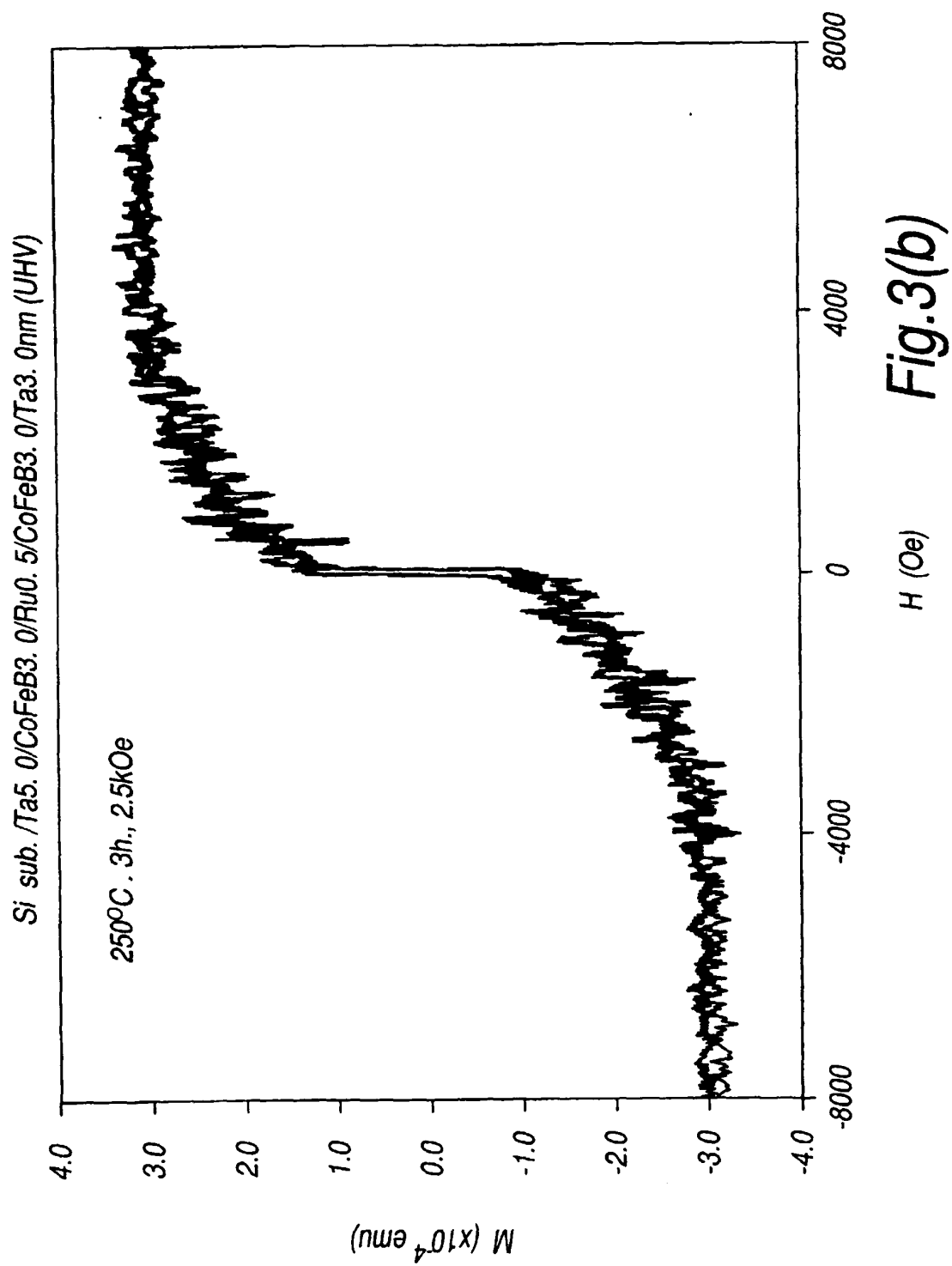


Fig.3(a)



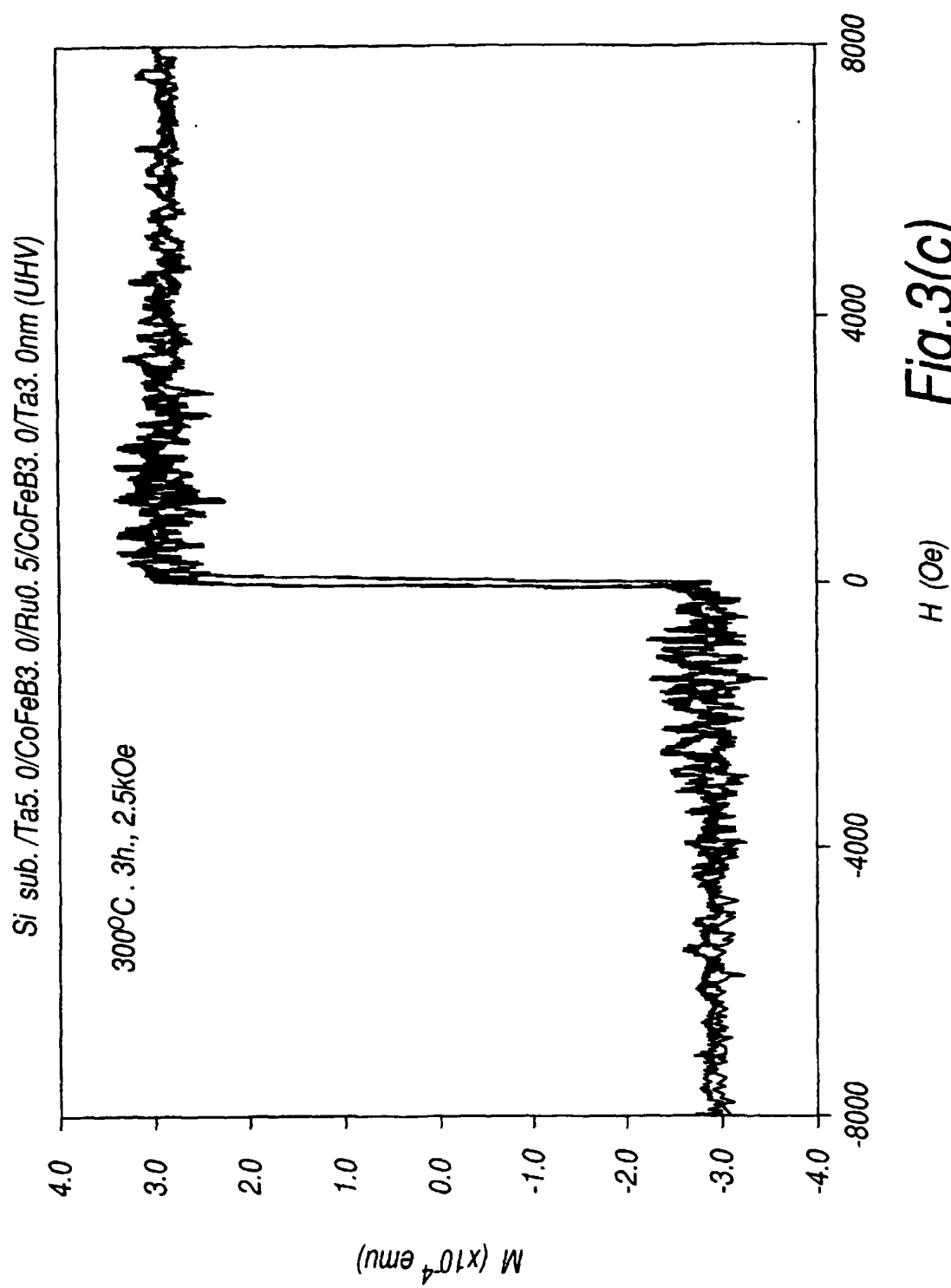


Fig.3(c)

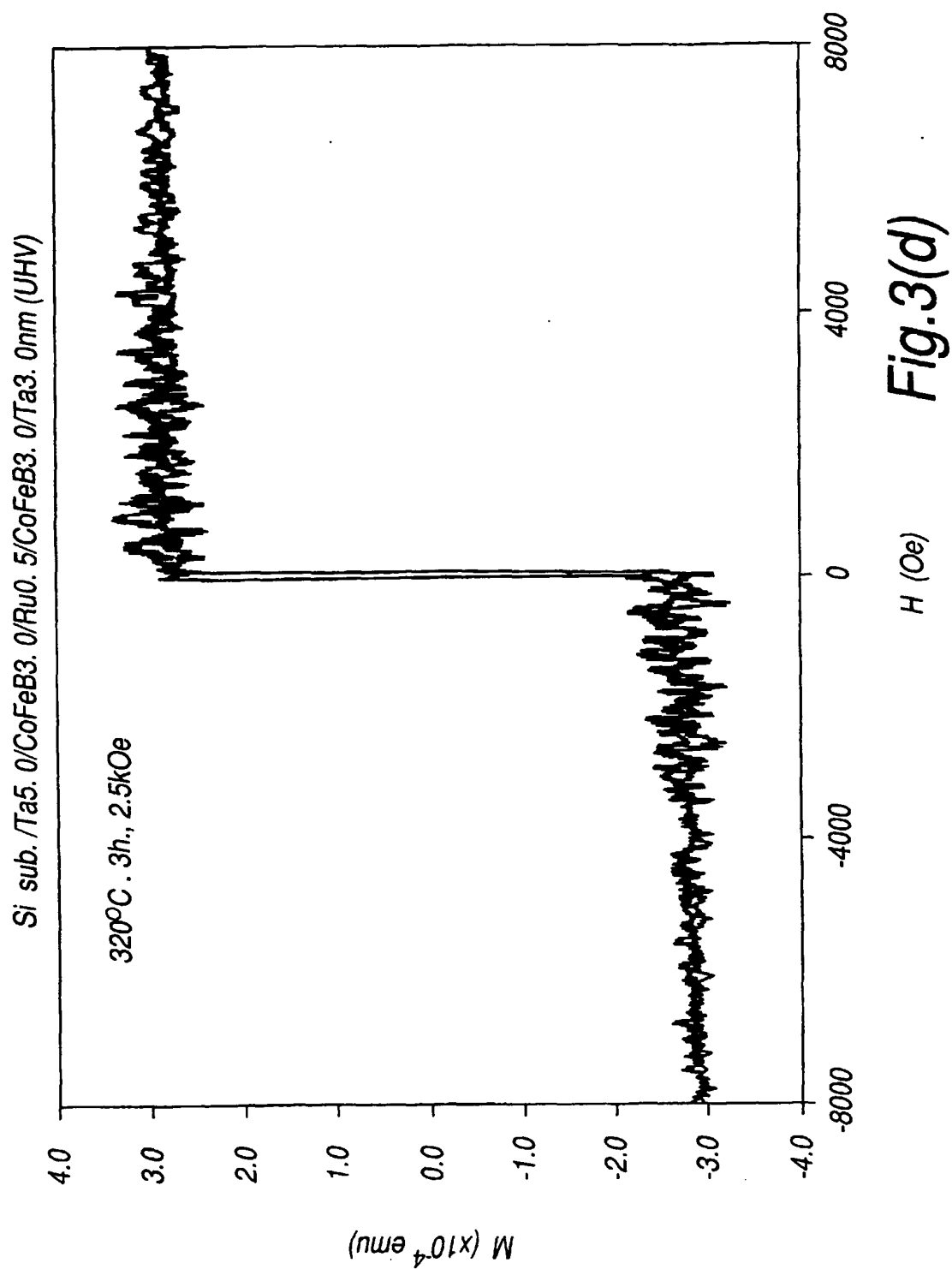




FIG. 4

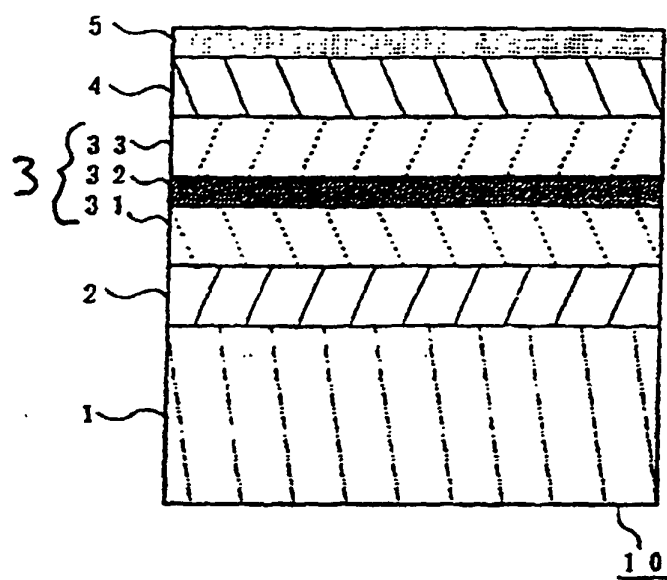


FIG. 5A

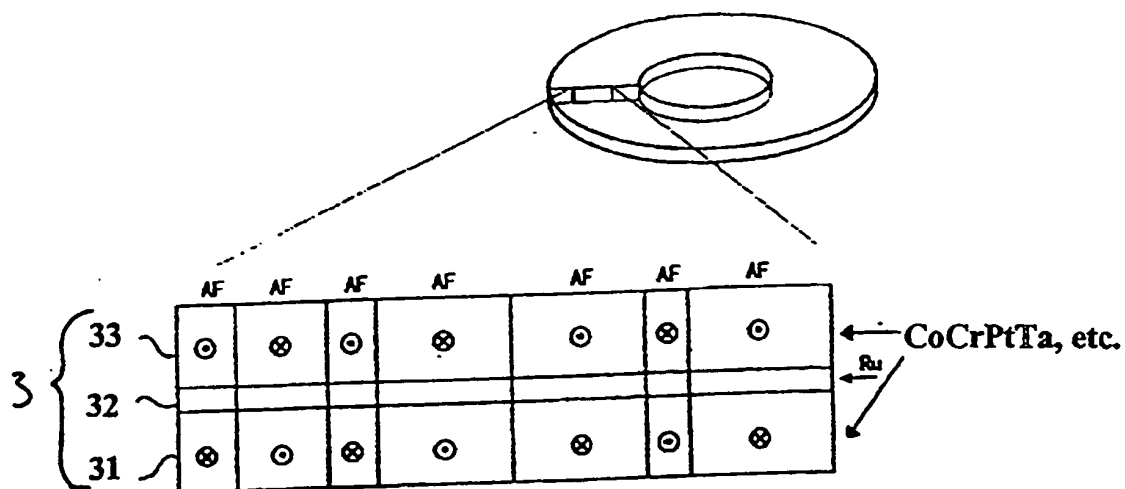


FIG. 5B

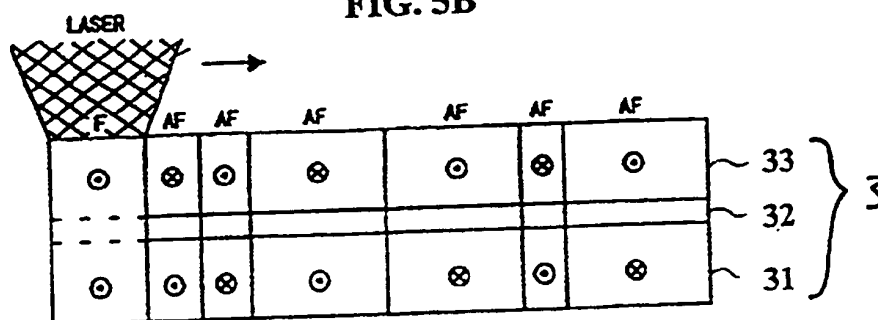


FIG. 5C

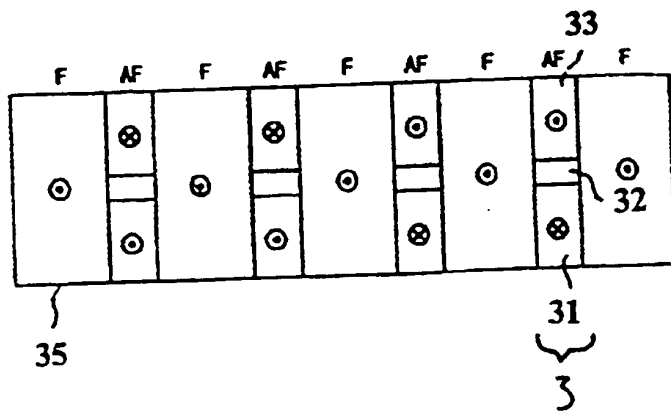


FIG. 6

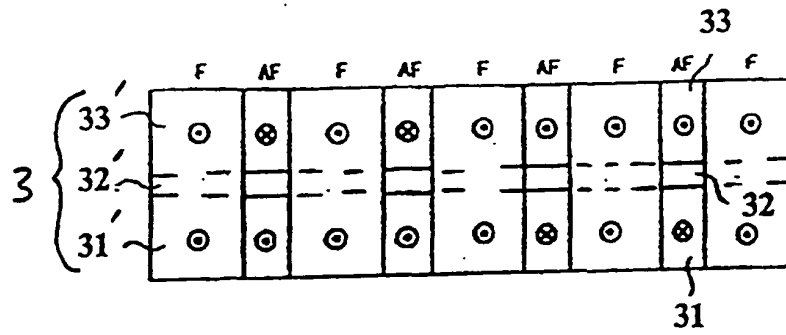


FIG. 7

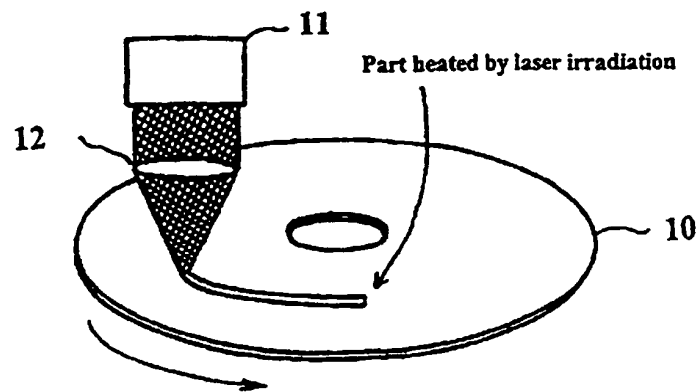


FIG. 8

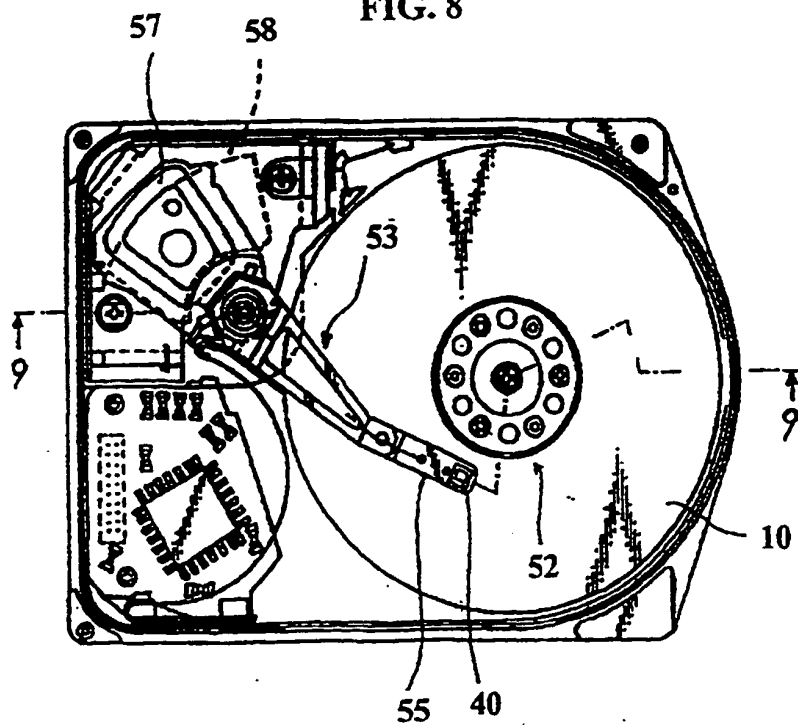


FIG. 9

